

# SMS FOR LIFE KENYA

## Malaria Surveillance and Commodity Tracking Solution

### BACKGROUND

Greenmash was commissioned by the SMS for Life program, with the support of the Swiss Tropical Public Health Institute, to help resolve stock-outs and track usage of vital malaria tests and treatments in Kenya.

#### Malaria

According to the World Health Organisation (WHO), roughly 3.2 billion people are at risk of malaria. This leads to about 198 million malaria cases and an estimated 584,000 malaria deaths per year. People living in the low-income countries are the most vulnerable. While malaria is perfectly treatable, early diagnosis and prompt treatment are essential for ensuring recovery.

If the needed medications and rapid diagnostics tests run out or otherwise become unavailable, this obviously has very serious health implications. The need for effective communication, accurate data, and prompt stock reporting is paramount to ensuring positive health outcomes.

Before the implementation of the Greenmash solution, stock-outs of malaria tests and treatments were common (over 40% of facilities at any one time), and the turnaround for new stock would typically occur after 1 or 2 months.

*Source: Githinji S, Kigen S, Memusi D, Nyandigisi A, Mbithi AM, et al. (2013) Reducing Stock-Outs of Life Saving Malaria Commodities Using Mobile Phone Text Messaging: SMS for Life Study in Kenya. PLoS ONE 8(1): e54066. doi:10.1371/journal.pone.0054066*

#### Challenge

The technology solution would need to ensure high reporting rates and ensure accurate data was quickly available to all stakeholders. This solution would need to work in conjunction with traditional methods of improving health coverage, while ensuring that collected data would be seamlessly integrated with existing health information systems.

#### Major issues identified:

- ✘ High stock-out rates of treatments and tests, especially in rural health facilities.
- ✘ Zero visibility of health facility stock levels at the district management level, Extreme difficulty in ensuring adequate supply and continuous availability of Rapid Diagnostics Tests (RDT) and first-line malaria treatments (Artemether-Lumefantrine or AL) in all health facilities; as mandated by the Kenyan National Malaria Strategy.
- ✘ Resupplying of stocks take far too long and emergency orders for new supplies too commonplace.
- ✘ Inconsistent reporting of administered tests and treatment usage.
- ✘ Sporadic paper-based ordering and reporting process.

#### Goals & Requirements

The following requirements were specified for the technology solution:

- ✔ Eliminate (or at least significantly reduce) malaria test and treatment stock-outs.
- ✔ Ensure adequate supply and continuous availability of RDTs and ALs in all health facilities.
- ✔ Provide visibility to on a regular basis, to stock levels of anti-malaria medicines and RDTs to all district and national stakeholders.
- ✔ Enable efficient redistribution of anti-malaria medicines between health facilities.
- ✔ More accurate forecasting of anti-malaria medicine demand.
- ✔ Eliminate (or at least significantly reduce) inefficient paper processes.
- ✔ Ensure that emergency supply orders become only a rare occurrence.
- ✔ Increase visibility to ensure adequate stock levels and equitable distribution in all facilities.
- ✔ Reduce new stock order turnaround time from 1-2 months.

### The ultimate goals of the project were identified as:

- ✓ Dramatically reduce the number of preventable deaths from Malaria.
- ✓ Ensure adequate supply of malaria tests and treatments in affected areas, as mandated by the Kenyan National Malaria Strategy.

## SOLUTION

Greenmash designed, configured, and deployed a technology based solution using the Mango platform; working closely with all stakeholders to ensure that all requirements were met. An SMS technology based solution was considered ideal since Kenya has a well-developed mobile network, and the majority of the population has access to at least basic feature mobile handsets.

- ✓ A pilot study was undertaken, with 87 public health facilities across 5 rural districts in Kenya connected to the Mango system.
- ✓ SMS-based data collection was implemented, allowing facilities to quickly report stock-levels and communicate information, while needing only basic mobile handsets to send data.
- ✓ Greenmash negotiated a free-to-use single short code number that worked with all mobile networks in Kenya to ensure that health workers did not incur any costs to participate.
- ✓ Scheduled data collection surveys were setup on a weekly basis, with an escalation process implemented to ensure compliance. Since surveys are delivered automatically every week, this ensures a regular supply of updated information from all facilities.
- ✓ A minimum stock level was configured for all commodities, along with automated alerts whenever stock thresholds reach a critical level in any facility. Enabling a much faster response time than was possible using paper forms.
- ✓ A credit system was implemented to incentivise participation in the project. 50 Kenyan shillings worth of airtime was automatically credited after each successful response within the time limits.
- ✓ Automatically generated reports, updated and delivered in real-time, enable monitors to quickly evaluate conditions in any connected facility in Kenya, including:
  - Show stock levels in all connected facilities (to aid redistribution as needed)
  - Stock levels of all four AL types (infant, toddler, child, and adult packs)
  - Stock levels of available RTDs
  - Stock-out alerts
  - Number of days commodity is stocked-out
  - Data by individual facility, region, district, and/or health area

## RESULTS

Impressive results were achieved over the course of the Mango deployment.

- ✓ After the 26 week pilot an independent review was carried out by the KEMRI Wellcome Foundation with the results published in a peer reviewed paper Githinji S, Kigen S, Memusi D, Nyandigisi A, Mbithi AM, et al. (2013) Reducing Stock-Outs of Life Saving Malaria Commodities Using Mobile Phone Text Messaging: SMS for Life Study in Kenya. PLoS ONE 8(1): e54066. doi:10.1371/journal.pone.0054066
- ✓ In the first week 47.7% of facilities had reported a stock-out, and by week 21 stock-outs of all AL packs had been eliminated.
- ✓ Response rates from facilities exceeded 97%, with 85.6% responding within the reminder period and 8.7% after the reminder period.
- ✓ Mean SMS formatting error rates were only 3.2%.
- ✓ Average number of system logins by the district and regional managers was 8 times per week.
- ✓ Dramatic improvements to testing rates and appropriate treatment rates.
- ✓ Increased transparency and accuracy over stock counts in all connected facilities.
- ✓ Automatically generated reports and alerts enable much faster response times, to better ensure notification rates and registration follow through (now in days rather than weeks).
- ✓ Only 1-day training session was required for health facility participants and this was coordinated with training on the use of RDTs to reduce the burden on the district training budget.
- ✓ Based upon the success of the pilot and the findings of the evaluation a recommendation was made by the National Malaria Control Program that the system should be rolled out to all 4700 public health facilities across Kenya and it was recommended that the mango system be adopted into the Health system

## Conclusion

- ✓ Mango offers a solution whenever greater visibility, data accuracy, and consistent reporting are crucial for improving health outcomes. Mango-powered solutions work very well in areas with poor and/or unreliable access to communications infrastructure.
- ✓ Mango deployments deliver significant benefits including dramatic savings in time and money required to collect, manage and report on health information.
- ✓ Data sharing is improved with real time access available to any stakeholder anywhere in the world. Mango is easily integrated with other management systems including DHIS2
- ✓ Alternately Greenmash can design and deploy the solution as a technology partner enabling users to take advantage of our technical expertise and experience whilst focusing on the management of the program.

Ask us today how Mango and Greenmash can help you.

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